

REMARKS

This amendment addresses the Office Action dated July 31, 2001.
Reconsideration of the present application is respectfully requested.

I. Response to Office Action

In the Office Action, Applicant's Claims 2-10, 13-15, 17, 19, 20, and 23-29 were rejected as obvious over U.S. Pat. No. 4,888,698 ("Driessen"). With this response, Applicant has amended Claims 23-25, 27, and 29. These amendments are intended to express the patentably distinguishing features recited in these claims more clearly. As explained below, Applicant's claims are not obvious over the Driessen patent.

Applicant's claims relate to the organization and access of data that represent geographic features in a region. More particularly, Applicant's claims relate to the organization and access of geographic data within data parcels that form a geographic database.

It is known from the prior art (e.g., Driessen and others) to organize a geographic database into "parcels." The geographic data in each "parcel" represent the geographic features contained in a separate respective one of a plurality of rectangular areas into which the entire represented geographic region is divided. However, for some navigation-related functions, the rectangular area corresponding to a parcel may be larger than needed and therefore inefficient. The subject matter described in Applicant's claims goes beyond the prior art by addressing the organization and access of geographic data within each data parcel.

As an example, according to Applicant's independent Claim 23, the "area" associated with each parcel is further divided into a plurality of "sub-areas." According to Applicant's Claim 23, an "index" is associated with each "parcel" and, for each "data entity" contained in the "parcel", the "index" identifies each of the "sub-areas" that the "geographic feature" represented by the "data entity" intersects.

The Driessen patent discloses how to form data parcels. Driessen also discloses how to access the data parcels, i.e., by using tables and/or an index. However, Driessen contains no disclosure regarding the organization or access of data within any parcel. Because Driessen has no disclosure relating the organization or access of data within any

parcel, Driessen fails to disclose at least two limitations of Applicant's Claim 23. First, Driessen does not disclose that any "*areas*" associated with "*parcels*" are further divided into a "*plurality of sub-areas*", as recited in Applicant's Claim 23. Second, Driessen does not disclose a "*first index*" that associates the "*data entities*" in the "*parcel*" with the "*sub-areas*", as recited in Applicant's Claim 23.

In the Office Action, it was acknowledged that Driessen did not disclose a "*first index*", as recited in Applicant's Claim 23. The position was expressed in the Office Action, however, that the use of indexes was well known and therefore, that it would have been obvious to modify the method of Driessen to include the "*first index*", as recited in Applicant's Claim 23.

Applicant acknowledges that the use of indexes may be well known. However, what is not obvious is the combination of steps set forth in Applicant's independent Claim 23 that includes "*dividing the area associated*" with a "*parcel*" into "*a plurality of sub-areas*" and then forming a "*first index*" that associates each of the "*data entities*" contained in the "*parcel*" with each of the "*sub-areas*" that are intersected the "*geographic feature*" represented by the "*data entity*." Not only does Driessen fail to suggest or teach the formation of "*sub-areas*" and then forming an "*index*" that associates the "*data entities*" in a "*parcel*" with the "*sub-areas*", Driessen includes no teaching whatsoever that suggests or teaches the need for any organization or access of data within any parcel.

At least for this reason, Applicant's independent Claim 23 is not obvious over the Driessen patent.

Applicant's Claims 24 and 25

Applicant's independent Claims 24 and 25 relate to methods of using a geographic database. The methods of Applicant's Claims 24 and 25 include the steps of "*using a first index*" associated with a "*parcel*" to identify which of a "*plurality of rectangular sub-areas*" into which a "*first rectangular area*" associated with "*parcel*" is divided intersect a "*search area*" and "*using a second index*" to identify the "*data entities*" contained in the "*parcel*" that "*intersect each of the plurality of rectangular sub-areas identified as intersecting the search area*." As explained above, Driessen does

not disclose that a “*parcel*” is divided into a “*plurality of rectangular sub-areas*” or that a “*first*” and a “*second index*” are used to identify which “*data entities*” in the “*parcel*” are associated with the intersected “*plurality of rectangular sub-areas.*” Because Driessen includes no teaching or suggestion of organization or access of data entities within a parcel, or even the need for organization or access of data entities within a parcel, Applicant’s Claims 24 and 25 are not obvious over Driessen.

Applicant’s Claims 26, 26, and 29

Applicant’s Claims 26, 27, and 29 relate to a “geographic database.” The “geographic database” is organized into “parcels.” Each “parcel” has one or two “*indexes*” that associates the “*data entities*” in the “*parcel*” to those “*sub-areas*” into which the “*area*” corresponding to the “*parcel*” is divided. As explained above, Driessen does not disclose that a “*parcel*” is divided into a “*plurality of sub-areas*” or that an “*index*” is used to identify which “*data entities*” in the “*parcel*” are associated with a “*sub-areas.*” Because Driessen includes no teaching or suggestion of organization or access of data entities within a parcel, or even the need for organization or access of data entities within a parcel, Applicant’s Claims 26, 27 and 29 are not obvious over Driessen.

Applicant’s Claims 2-10, 13-15, 17, 19, 20 and 28

Applicant’s Claims 2-10, 13-15, 17, 19, 20 and 28 are dependent claims that distinguish Driessen at least for the same reasons explained above in connection with their respective base claims. In addition, these claims recite further features and limitations that are neither disclosed nor suggested by Driessen.

II. Extension of time

Accompanying this response is a request for an extension of time including an authorization for payment of the fee associated therewith.



III. Conclusion

With this response, all the issues in the Office Action mailed July 31, 2001 have been addressed. The present application has been placed in condition for allowance. If any issues remain, the Examiner is invited to call the undersigned at the telephone number indicated below.

Respectfully submitted,

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MARKED-UP VERSIONS

IN THE CLAIMS (marked-up versions):

Please amend Claims 23-25, 27, and 29, as indicated.

1 23. (Amended) A method for producing a database that represents
2 geographic features in a geographic region comprising the steps of:
3 separating a plurality of data entities that represent the geographic features into a
4 plurality of parcels,
5 wherein each parcel of said plurality of parcels contains a separate
6 subset of said plurality of data entities, and
7 wherein the subset of said plurality of data entities contained in
8 each parcel represents the geographic features located in a separate one of
9 a plurality of areas into which the geographic region is divided;
10 wherein an improvement comprises:
11 for each parcel of said plurality of parcels,
12 dividing the area associated therewith into a plurality of sub-areas;
13 and
14 storing a first index that identifies, for each of the data entities
15 contained in the parcel, each of the sub-areas intersected by the geographic
16 feature represented thereby,
17 whereby each sub-area in which a geographic feature is located can be determined
18 by using the first index.

1 24. (Amended) A method of using a geographic database comprising the
2 steps of:
3 accepting specification of a search area in a geographic region represented by the
4 geographic database;
5 identifying a parcel of data in the geographic database, wherein the parcel
6 contains data entities that represent geographic features encompassed within a first

7 rectangular area located within the geographic region, wherein the first rectangular area
8 intersects said search area;
9 wherein an improvement comprises:
10 using a first index associated with the parcel to identify which of a plurality of
11 rectangular sub-areas into which the first rectangular area is divided intersect the search
12 area; and
13 using a second index associated with the parcel to identify the data entities
14 contained in the parcel that intersect each of the plurality of rectangular sub-areas
15 identified as intersecting the search area,
16 whereby the data entities that represent the geographic features located within the
17 search area are determined.

18
1 25. (Amended) A method of using a geographic database to identify
2 geographic features located within a search area, wherein the geographic database
3 contains data entities that represent geographic features located in a geographic region,
4 and wherein the geographic database is organized into parcels, each of which contains a
5 subset of all the data entities in the geographic database, and wherein the subset of data
6 entities in each parcel represent the geographic features encompassed within a separate
7 respective one of a plurality of rectangular areas into which the geographic region is
8 divided, wherein the method comprises the steps of:

9 (a) identifying each parcel that is associated with a rectangular area that
10 intersects the search area;

11 wherein an improvement comprises:

12 (b) for each parcel identified in step (a), using a first index associated with the
13 parcel to identify each rectangular sub-area formed of the rectangular area associated
14 with the parcel that intersects the search area; and

15 (c) for each parcel identified in step (a), using a second index associated with
16 the parcel to identify each of the data entities contained therein that represents a
17 geographic feature that intersects each of the sub-areas identified in step (b),
18 whereby the data entities identified in step (c) represent geographic features
19 located in the search area.

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1 27. (Amended) A geographic database comprising:

2 (a) data entities, each of which represents a geographic feature in a
3 geographic region,

4 wherein the data entities are separated into a plurality of parcels,

5 wherein each parcel contains a subset of the data entities,

6 wherein the subset of data entities in each parcel represents those

7 geographic features encompassed within a separate respective one of a plurality of

8 rectangular areas into which the entire geographic region is divided; and

9 wherein an improvement comprises:

10 (b) a plurality of indexes, each of which is associated with a separate

11 respective one of said plurality of parcels, and wherein each index relates each of the data

12 entities in the subset of data entities contained in the parcel associated therewith to at

13 least one rectangular sub-area formed of the rectangular area associated with the parcel

14 associated therewith,

15 wherein said geographic database is stored on a computer readable storage

16 medium.

17

1 29. (Amended) A computer usable medium having computer readable data

2 structure means embodied thereon, wherein the computer readable data structure means is

3 used for a database for geographic data comprised of data records that represent segments

4 of roads located in a geographic region, said computer readable data structure

5 comprising:

6 a plurality of parcels, each of which contains a separate portion of the data

7 records, such that each parcel contains the data records that represent the segments of

8 roads located in a separate one of a plurality of areas into which the geographic region is

9 divided;

10 wherein an improvement comprises:

11 a plurality of first indexes, each of which is associated with a respective one of the

12 plurality of parcels, wherein each first index defines a plurality of sub-areas formed of the

13 area associated with the parcel associated therewith; and

14 a plurality of second indexes, each of which is associated with a respective one of
15 the plurality of parcels, wherein each second index associates each of the data records in
16 the parcel associated therewith to at least one of the plurality of sub-areas defined by the
17 first index associated with the parcel,
18 whereby the computer readable data structure means identifies which of the data
19 records represent segments of roads located in any specified sub-area of any specified
20 area.